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**Patent and Trademark Office**

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BURNS DOANE SWECKER & MATHIS  
P O BOX 1404  
ALEXANDRIA VA 22313-1404

EXAMINER  
SHOSHO, C

ART UNIT	PAPER NUMBER
1714	2

DATE MAILED: 05/25/00

**Pleas find below and/or attached an Office communication concerning this application r  
pr ceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/409,338

Applicant(s)  
Yamada et al.

Examiner  
Callie Shosho

Group Art Unit  
1714



☐ Responsive to communication(s) filed on \_\_\_\_\_

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-9 \_\_\_\_\_ is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-9 \_\_\_\_\_ is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been  
☒ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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**DETAILED ACTION**

**Priority**

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 9/30/98. It is noted, however, that applicant has not filed a certified copy of the Japanese application, JP 10-278023 as required by 35 U.S.C. 119(b).

**Claim Rejections - 35 USC § 102**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1-3, 5, and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 787778.

EP 787778 discloses an ink jet ink comprising dye such as Acid Yellow 23 which is an azo dye, aqueous medium, and basic polymer such as polyvinylpyrrolidone which corresponds to presently claimed formula I wherein L is a single bond and Am is a nitrogen atom-containing

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heterocyclic group. It is disclosed that the polymer has a molecular weight of preferably 30,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (page 3, line 56, page 4, lines 3-6, 15, and 26-27, page 6, lines 49-50, and Table 1-Ink C).

In light of the above, it is clear that EP 787778 anticipates the present claims.

4. Claims 1-3, 6-7, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by GB 2031448.

GB 2031448 disclose an ink jet ink having a viscosity of 1.5-25 cP wherein the ink comprises dye, aqueous medium, and 1-40% basic polymer such as polyvinylpyrrolidone which corresponds to presently claimed formula I wherein L is a single bond and Am is a nitrogen atom-containing heterocyclic group. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer and the above ink (page 1, lines 24-25 and 37, page 2, line 64, and page 3, lines 29-34).

In light of the above, it is clear that GB 2031448 anticipates the present claims.

5. Claims 1-2, 6-7, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Song (U.S. 4,834,799).

Song discloses an ink jet ink having a viscosity of 1.6-7 cP wherein the ink comprises dye, aqueous medium, and 5-20% basic polymer which corresponds to presently claimed formula

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I wherein L is a mixture of -CO-, -O-, and alkylene and Am is a tertiary amino group. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer and the above ink (col.2, line 48-col.3, line 6, col.3, lines 18-20 and 40-42, and col.4, line 17 and 22-28).

In light of the above, it is clear that Song anticipates the present claims.

6. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Schwarz, Jr. (U.S. 5,990,198).

Schwarz, Jr. discloses an ink jet ink having a viscosity of less than 10 cP wherein the ink comprises azo dye, aqueous medium, and 0.5-10% basic polymer corresponding to presently claimed formula I wherein L is a single bond and Am is a nitrogen atom-containing heterocyclic group. It is disclosed that the polymer has a molecular weight of preferably 1,000-100,000 or most preferably 2,000-5,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.6, lines 44-45, col.7, lines 5-63, col.8, lines 22, 26, and 45, col.10, lines 26-27 and 37-38, and col.10, line 61-col.11, line 1).

In light of the above, it is clear that Schwarz, Jr. anticipates the present claims.

7. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Gundlach et al. (U.S. 6,054,505).

Gundlach et al. disclose an ink jet ink having a viscosity of no more than 10 cP wherein the ink comprises azo dye, aqueous medium, and 0.1-50% basic polymer corresponding to

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presently claimed formula I wherein L is a single bond and Am is a quaternary ammonium group or a nitrogen atom-containing heterocyclic group such as 1-imidazolyl. It is disclosed that the polymer has a molecular weight of preferably 1,000-100,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer and the above ink (col.6, lines 65-66, col.9, lines 16-52, col.9, line 53-col.10, line 23, col.11, line 65-col.12, line 58, col.13, lines 15-17, 31, and 49, col.16, lines 1-5, col.23, lines 18-24 and 31-32, and col.23, line 55-col.24, line 5).

light of the above, it is clear that ~~Schwarz~~Gundlach et al. anticipates the present claims.

8. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bates et al. (U.S. 5,958,999) taken in view of the evidence given in Breton et al. (U.S. 5,938,827).

Bates et al. disclose an ink jet ink containing dye, aqueous medium, and 0.1-10% basic polymer such as polyvinylpyrrolidone and polyvinylpyridine which corresponds to presently claimed formula I wherein L is a single bond and Am is a nitrogen atom-containing heterocyclic group. It is disclosed that the polymer has a molecular weight of less than 50,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.3, lines 15-35, col.4, lines 11-15, col.5, lines 48-50, col.7, lines 16-17 and 48-57, col.9, line 65, col.10, lines 20 and 30, and example 11).

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Bates et al. does not explicitly disclose the type of dye used, but does disclose the use of a dye known as Fast Black 2 (col.17, lines 3-4). Breton et al., which is drawn to ink jet inks, discloses that Fast Black 2 is indeed an azo dye (col.8, line 6 and last two formula).

In light of the above, it is clear that Bates et al. anticipates the present claims.

9. Claims 1-5 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Nigam et al. (U.S. 5,973,025).

Nigam et al. discloses an ink jet ink having a viscosity of 1.5-15 cP wherein the ink comprises azo dye, aqueous medium, and basic polymer corresponding to presently claimed formula I wherein L is a single bond, -CO-, arylene, or alkylene and Am is a nitrogen atom-containing heterocyclic group such as 1-imidazolyl or a quaternary ammonium group. It is disclosed that the polymer has a molecular weight of preferably 300-100,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.4, lines 11-13, col.5, lines 45-46, col.8, lines 52-53, col.9, lines 49-50, col.10, lines 36-37 and 42-46, col.12, lines 41-42 and 48-49, col.13, lines 40-45, col.18, lines 42-43, col.20, lines 6-15, and col.33, lines 15-17).

In light of the above, it is clear that Nigam et al. anticipates the present claims.

10. Claims 1-3, 5, and 8-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimomura et al. (U.S. 5,886,638).

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Shimomura et al. discloses an ink jet ink comprising azo dye, aqueous medium, and basic polymer corresponding to the presently claimed polymer wherein L is a single bond, -CO-, -O-, or alkylene and Am is a nitrogen atom-containing heterocyclic group. It is disclosed that the polymer has a molecular weight of preferably 5,000-300,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.10, line 65, col.11, lines 25-64, col.12, lines 40-44, col.13, lines 17-19, col.18, lines 48-65, and col.22, line 15).

In light of the above, it is clear that Shimomura et al. anticipates the present claims.

**Claim Rejections - 35 USC § 103**

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.



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12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2031448 in view of EP 787778.

The discussion with respect to GB 2031448 as described in paragraph 4 above is incorporated here by reference.

The difference between GB 2031448 and the present claimed invention is the requirement in the claims of the molecular weight of the polymer.

GB 2031448 discloses polyvinylpyrrolidone but does not explicitly disclose its molecular weight.

EP 787778, which is drawn to ink jet inks, discloses a polyvinylpyrrolidone having molecular weight of preferably 30,000 which increases the extensional viscosity of the ink without effecting the shear viscosity and prevents the formation of aerosol breakoff remnants

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which improves print quality (page 2, line 52-page 3, line 4, page 3, lines 39-47 and 54-56, and page 4, lines 5-6).

In light of the motivation for using polyvinylpyrrolidone with specific molecular weight disclosed by EP 787778 as described above, it therefore would have been obvious to one of ordinary skill in the art to produce polyvinylpyrrolidone having this molecular weight in the ink of GB 2031448 in order to produce an ink with improved print quality, and thereby arrive at the claimed invention.

14. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 787778, Bates et al. (U.S., 5,958,999), or Shimomura et al. (U.S. 5,866,638) either of which in view of Nigam et al. (U.S. 5,973,025).

The discussion with respect to EP 787778, Bates et al., and Shimomura et al. as described above in paragraphs 3, 8, and 10 respectively is incorporated here by reference.

The difference between EP 787778, Bates et al., or Shimomura et al. and the present claimed invention is the requirement in the claims of the viscosity of the ink.

Neither EP 787778, Bates et al., or Shimomura et al. explicitly disclose the viscosity of their ink jet inks. However, given that if the ink viscosity is too high, the ink clogs the printer nozzles, it would have been within the level of one of ordinary skill in the art to control the viscosity of the ink jet ink to avoid printer clogging. Evidence to support this position is found in

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Nigam et al. which discloses that the viscosity of an ink is adjusted depending on its desired utility, and that for ink jet inks, the viscosity is typically 1.5-15 cP (col.18, lines 38-45).

In light of the above, it would have been obvious to one of ordinary skill in the art to control the viscosity of the ink jet inks of either EP 787778, Bates et al., or Shimomura et al. to 1.5 to 15 cP in order to produce an ink that will not clog the printer nozzles, and thereby arrive at the claimed invention.

15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nigam et al. (U.S. 5,973,025) in view of Schwarz, Jr. (U.S. 5,990,198).

The discussion with respect to Nigam et al. as described in paragraph 9 above respectively is incorporated here by reference.

The difference between Nigam et al. and the present claimed invention is the requirement in the claims of the amount of polymer.

Schwartz, Jr., which is drawn to ink jet inks, discloses the use of 0.1-30% basic polymer containing nitrogen-containing heterocyclic groups in order to produce ink with improved water fastness, smear resistance, and reduced bleed (col.6, lines 1-8).

In light of the motivation for using specific amount of polymer disclosed by Schwartz, Jr. as described above, it therefore would have been obvious to one of ordinary skill in the art to use this amount of polymer in the ink if Nigam et al. in order to produce an ink with improved water fastness, smear resistance, and reduced bleed, and thereby arrive at the claimed invention.

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16. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomura et al. (U.S. 5,866,638).

The discussion with respect to Shimomura et al. as described in paragraph 10 above respectively is incorporated here by reference.

The difference between Shimomura et al. and the present claimed invention is the requirement in the claims of the amount of polymer.

There is no explicit disclosure in Shimomura et al. of the amount of polymer used, however, Shimomura et al. do disclose that the amount of polymer is selected according to the kind of process used to apply the ink (col.12, line 65-col.13, line 9).

Thus, it therefore would have been obvious to one of ordinary skill in the art to choose amounts of polymer, including those presently claimed, depending on the recording process utilized, in the present case ink jet printing, and thereby arrive at the claimed invention.

17. Claims 1-2 and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colt et al. (U.S. 5,389,131) in view of Tomita et al. (U.S. 5,019,164).

Colt et al. disclose an ink jet ink having a viscosity of 1-2.5 cP wherein the ink contains aqueous medium, azo dye, and 0.4-2% polyamine. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.4, lines 4-5 and 48-49, col.6, line 28, col.12, lines 2-29 and 41-45, col.12, line 64-col.13, line 13, and col.18, lines 63-64).

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The difference between Colt et al. and the present claimed invention is the requirement in the claims of specific type of polymer.

Tomita et al., which is drawn to ink composition, discloses the use of polyamines which correspond to presently claimed formula I when L is a single bond and Am is a tertiary amino group. The polyamines have molecular weight of 600-40,000 (col.4, lines 45-55, col.9, lines 45-51, and Table A). The motivation for using such polymer is to improve the water resistance and drying of the ink (Table 2).

In light of the motivation for using specific type of polymer disclosed by Tomita et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use this polymer as the polyamine in the ink of Colt et al. in order to produce an ink with improved water resistance and drying, and thereby arrive at the claimed invention.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art discloses ink jet ink containing basic polymers:

Price et al. (U.S. 6,048,389)

Gundlach et al. (U.S. 6,001,899)

Suzuki et al. (U.S. 6,051,645)

Taniguchi et al. (U.S. 5,667,572)

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The following prior art discloses ink jet inks containing azo dyes:

Aoki et al. (U.S. 5,482,545)

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie Shosho whose telephone number is (703) 305-0208. The examiner can normally be reached on Mondays-Thursdays from 7:00 am to 4:30 pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

C. S.

Callie Shosho

5/22/00

*Vasu Jagannathan*  
Vasu Jagannathan  
Supervisory Patent Examiner  
Technology Center 1700